REMARKS

In the Office Action mailed April 24, 2002, the Examiner rejected claims 3-8 under 35 U.S.C. § 112, 1st paragraph. The claims were also rejected under 35 U.S.C. 102(b) as being anticipated by Reilly. Finally, claims 3-5 and 7-8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Reilly in view of Taylor or Sealfon. Applicant respectfully traverses each of these rejections.

35 U.S.C. § 112, 1st paragraph

Claim 4 has been amended by replacing the term "substantially" on line 7 with the phrase "greater than". Support for usage of this phrase is found at page 5, lines 4-5 and page 6, lines 19-24 of the specification.

Applicant's recitation of "balanced piston" in claims 5 and 6 is supported by the specification as a whole. However, the Examiner is specifically directed to page 5, lines 9-12 (piston balanced by upstream pressure of controller), page 6, line 24 – page 7, line 1. In claim 6, Applicant has also replaced the term "supplying" at line 17 with the term "venting".

Finally, neither claim 7 nor claim 8 disclose new matter. As discussed at page 5, lines 8-12 and page 6, line 24 – page 7, line 1 of the specification:

> Use of the near 1:1 ratio also permits the piston 26 to be closed and balanced by upstream pressure from the gas controller 16. More preferably ... the close to 1:1 ration will allow the valve 10 of the present invention to dump downstream pressure [from the mold] equal to the lowest set point pressure attainable by the upstream gas controller 16.
>
> ...
>
> Use of the 1:1 ration **also** permits the piston 126 to be closed **and balanced** by upstream pressure from the gas controller 116.

The piston of the present invention does not operate to simply fully open or fully close the mold vent. Indeed, from the above passages, it is readily understood that the gas controller is capable of regulating the movement of the piston 26 away

from the second position where it operates to seal the vent such that the venting of the mold is accomplished at an established rate. If the piston was merely intended to move between full open and full closed positions, there would be little or no advantage in having the piston being balanced at the near 1:1 dome to seat ratio. However, by balancing the piston in this manner, controlled venting of the mold is accomplished. Additionally, in regard to claim 7, because a first pressure is required to open the check valve and charge the mold and a second pressure is required to close the check valve, this balanced upstream pressure from the gas controller is necessarily at a third pressure.

35 U.S.C. 102 - 103

None of the references cited by the Examiner teach or discuss the controlled venting of a gas injection mold through the use of a piston that is balanced at a one-to-one dome to seat ratio. The Reilly reference is directed to a device for the rapid venting of a blow mold. As discussed in the prior amendment, in blow molding, the time required to eject a part from a mold has a significant effect on the overall cycle time for the part. More importantly, the mold pressures used in blow molding are quite low when compared to those for gas assist molding. Indeed, unlike gas assist operations, in blow molding there is typically a low pressure difference between the part volume and the atmosphere. Therefore, unlike gas assist operations, in blow molding it is advantageous to have a valve that opens quickly and rapidly depressurizes the mold cavity. Applicant confronts the problem of high mold cavity pressures in gas assist molding by the use of a valve having a piston that is balanced at a one-to-one dome to seat ratio. By balancing the piston in this fashion, venting of the mold cavity can be regulated by the gas controller controlling the movement of the

piston though changes to the upstream pressure. In a nutshell, Reilly discloses a venting arrangement that is structurally and functionally different from the present invention. However, of still greater importance is that fact that Reilly could not be adapted or otherwise modified to function in a gas assist system.

In view of the above amendments and remarks, Applicant submits that the application is now in proper form for allowance. Such action is respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 4 has been amended as follows:

4. (Amended) A gas assist mold dump valve positioned between a gas controller and a mold cavity, said valve comprising:

a regulator body having a inlet in fluid communication with a gas controller, an outlet in fluid communication with a mold cavity, a vent and a piston mounted for reciprocal movement between a first position wherein said vent is closed and a second position wherein said vent is open, said piston being balanced such that it has a [substantially] greater than one to one dome to seat ratio; and

a check valve disposed between and in fluid communication with said inlet and said outlet of said regulator body having an open position that permits a fluid to flow from said inlet to said outlet and a closed position that prohibits the flow of a fluid from said outlet to said inlet.

Claim 6 has been amended as follows:

6. (Amended) A method for controlling a valve comprising the steps of:

providing a gas controller;

providing a mold cavity;

providing a regulator body having an inlet in fluid communication with said gas controller, an outlet in fluid communication with said mold cavity, a vent for exhausting gas from said mold cavity and a piston mounted for reciprocal movement between a first position wherein said vent is closed and a second position wherein said vent is open;

providing a check valve disposed between and in fluid communication with said inlet and said outlet of said regulator body, said check valve being biased in a closed position and having an open position that permits a fluid to flow from said inlet to said outlet;

supplying a fluid from said gas controller at a first pressure to said gas inlet, said first pressure being sufficient to place said check valve in said open position such that fluid is communicated to said outlet and said mold cavity and to move said piston to said first position;

[supplying] venting a fluid from said gas controller at a second pressure that is lower than said first pressure to said gas inlet such that said check valve is placed in said closed position and said fluid in said mold cavity at said first pressure operates to move said piston toward said second position to open said vent and exhaust said fluid from said mold cavity.